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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,818	01/21/2005	Koji Yamada	12065-0020	2397
22902	7590	11/28/2007		
CLARK & BRODY 1090 VERMONT AVENUE, NW SUITE 250 WASHINGTON, DC 20005			EXAMINER YANG, JIE	
			ART UNIT 1793	PAPER NUMBER
			MAIL DATE 11/28/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/521,818	Applicant(s) YAMADA ET AL.	
	Examiner Jie Yang	Art Unit 1793	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 September 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) 5-7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>04/01/2005</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election of "Group I—Claims 1-4, drawn to a method for recovering platinum group elements" in the reply filed on 9/19/2007 is acknowledged without traverse (MPEP 818.03(a)).

Claims 5-7 are withdrawn from consideration as being directed to a non-elected group and claims 1-4 are pending for examination.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ezawa et al (US 5,252,305, thereafter, '305) in view of Yamada (JP 2000-248322, thereafter, 'JP322).

Regarding claim 1, '305 teaches a process of recovering a platinum group metal (Abstract of '305). '305 teaches charging a catalyst impregnated with the platinum group metal, copper

and/or oxide of copper, a flux component, and a reductant component (abstract of '305 and heated in an electric furnace (Col.3, lines 1-2 of '305), which reads on the charging step in the instant claim. '305 teaches melted slag layer is on top of molten metal, the platinum group metal is absorbed and sedimented in the metal copper and absorbed in the metal copper layer, which reads on the sinking and enriching steps as claimed in the instant claim. '305 teaches forcing the upper melted slag to flow out of the electric furnace (Col.3, Lines 3-31 of '305), which reads on the separating step as claimed in the instant claim. But '305 does not explicitly state that the copper content of molten slag has decreased to 3.0wt.% or less when forced out. However, copper content in the molten slag is a result-effective variable in term of platinum group metal recovery rate as evidenced by 'JP322. 'JP322 teaches recovery of platinum group metals from metal base material catalyst (abstract of 'JP322). 'JP322 teaches 194ppm of Pt correlate with 200.8kg molten Cu, therefore, 1ppm Pt in the molten slag should correlate with 1.03kg Cu content of molten slag (Table 1 of 'JP322, Pt recovery rate is about 97.5%); and 205ppm of Pt correlate with 195kg molten Cu, therefore, 1ppm Pt in the molten slag should correlate with 0.95kg Cu content of molten slag

(Table 2 of 'JP322, Pt recovery rate is about 97.65%). Because 'JP322's data shows the relationship between copper content of the molten slag and the recovery rate of Pt, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the result effective variable of copper content in the molten slag, for example, to discharge molten slag when copper content has decreased to 3.0wt.% or less from the electric furnace as claimed in the instant claim in order to obtain a desired Pt recovery rate. See MPEP 2144.05 II.

Regarding claim 2, the average grain diameter of copper source material is recognized as a result-effective variable in term of dust losses and recover ability of platinum group elements. '305 teaches using crushed material SAC (Waste catalyst containing platinum group elements—refer to Col.1 lines 5-12 of '305), having a diameter of not more than 5 mm and copper powder (examples 1-3 of '305) to obtain not less than 99 percent recovery rate of Pt, Pd, and Rh, while the recovery rates of Pt, Pd and Rh of comparative example (with copper pieces—Col.5, line 32 of '305) were 96 percent, 95 percent and 93 percent, respectively (Col.6, lines 47-51 of '305). Therefore, it would have been obvious to one skilled in the art to control average grain diameter of copper source material, for

example, not less than 0.1mm and not greater than 10mm as recited in the instant claim to increase the recovery rates of platinum group elements. See MPEP 2144.05 II.

Regarding claim 4, '305 teaches charging, sinking, enriching, separating processes as discussed in the rejection for claims 1-2. '305 further teaches oxidizing the portion of the metal copper while the copper is heated at a temperature the metal copper is maintained in the melted state, separating the copper oxide layer, and further enriches the platinum group metal (Col. 3, line 23 to Col.4, line 16 of '305), as claimed in the instant claim.

Still regarding claim 4, '305 teaches the layer of the copper oxide flown out and separated may be, after solidified by cooling and isolated, reused in the process for elevating the recovery ratio of the platinum (Col.3, lines 58-61 of '305). Because cooling and isolated is general enough to include water cooling method and referring the discussing about average grain diameter of copper source material in the rejection for claim 2, it would have been obvious to one skilled in the art to water-cool the copper oxide and obtain 0.1mm to 10mm copper source material because '305 teaches it can be reused for elevating the recovery ratio of the platinum (Col.3, lines 58-61 of '305).

Claims 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over '305 in view of 'JP322 as applied on claims 1-2 and 4, and in view of Yokoyama et al (US 5,735,933, thereafter '933).

Regarding claim 3, '305 does not explicitly state maintaining a pressure within the electric furnace lower than atmospheric pressure from melting of the charge material to the discharging of the molten slag. '933 teaches a method for processing copper-containing waste materials in a vacuum heating furnace by heating the charging under vacuum, recovering the variety of metals (Col.3 line 1-5 of '933, which includes platinum group metals—noted by examiner) and non-metal vapor produced at each temperature level using a condensing and adsorbing means (Abstract of '933). '933 teaches the similar copper condensing and adsorbing recovery process as recited in the instant claim. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the vacuum technique to maintain a pressure lower than atmospheric pressure from melting of the charge material to the discharging of the molten slag as demonstrated by '933 in the process of '305, because '933 teaches a vacuum-heating processing method, which may be applied to all kinds of waste

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materials containing a variety of metals, allows recovery of highly pure individual metal components at a high yield (Col.3 line 1-5 of '933).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-2701884. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-2721244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JY

(JY)

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